

MILK PROCESSING IN PASTORALISM CONDITIONS AND IN COMPLIANCE WITH FOOD SAFETY REGULATIONS

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Abstract

Milk production – as raw material, raises special problems, often poorly known, although these problems determine both the later treatment and the sanitation of the finished products. It should be noted that no technological treatment can be adapted to low quality raw milk, without problems. Therefore, preserving the original quality of milk, from milking and till the time of processing is of major economic importance. To these, the influence of physical factors such as light and temperature is added. The statistics show that 85% of commercial milk of Romanian origin does not comply.

Key words: compliant milk, processing, food safety

INTRODUCTION

Romania, even as a Member State of the European Union, has requested derogations from fulfilment of Community standards on milk as raw material, derogation that will expire at the end of 2013. In order to get the derogations, Romania has invoked the great gaps existing, at this time, between the agricultural sector from Romania and the agricultural sector of well-developed states from the European Union.

Everybody knows that by only using the milking devices one can not solve the problem of milk's compliance. It also takes cooling, storage and transportation under conditions of hygiene and production profitability.

In order to get compliant milk, which will guarantee consumers' food safety, at a reasonable cost price, it takes investments that will cover, as good as possible, the entire production circuit: healthy animal, hygienic milking, pipe transportation, cooling, storage and transportation.

For the current sizes of farms, there can be no investments that will provide for the milk to be compliant.

MATERIAL AND METHOD

➤ 96 % of the number of producers own between 1 and 5 cows and produce more than 70% of Romania's milk quota;

➤ 60% of the total own just one cow but sell only 25% of the milk production, which shows that most of the production is used for self-consumption;

➤ 27% of milk quota is owned by producers aged 60+ (in 2007), their number representing about 32% of total;

➤ 36% of the total number of producers own between 2 and 20 cows and produce 55% of Romania's entire milk quota.

An analysis focused on the potential and typology of farms shows the fact that the milk is produced by:

- Farms owned by producers aged 60+;
- Farms with 1 (one) cow;
- Farms with 2 – 20 dairy cows;
- Farms with more than 20 dairy cows;

Considering the current structure of farms registered in the system of milk quotas, one can make the following observations:

- The people aged 60+ represent a very important segment, more than 32% of producers' total number;

- The farms with just one cow, although they represent 30% of the total number of farms, produce a very low quantity for

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selling. These producers use more than 70% of production for their self-consumption;

- The farms with 2 – 20 cows represent about 33% of the total and more than 55% of the milk quotas. From this number of dairy cows/farm up we can talk about market-oriented producers;

- The farms with more than 20 cows have the economic and financial capacity to develop. These farms can easily manage their problems.

RESULTS AND DISCUSSIONS

In the mountain area, with small exceptions, the dairy cows are bred in subsistence farms, this meaning an average of 2-3 dairy cows per farm. During an year, the animals are kept under stabulation conditions for 245 days and for the remaining 120 days the animals are left to graze on pastures. [2]

For the case of subsistence farms, the animal load is below 1LAU/ha. The animals are kept in warm stables, built in a traditional manner, from cheap and easily accessed materials, respectively wood. The duration of stabulation is very long, about 7,5 - 8 months/year, the grazing period does not exceed 120 days on average, being limited by unfavorable climate conditions (high number of snow days, cold precipitations, very low temperatures during late spring and early autumn).

During the grazing animals are maintained on pastures near the house, where there are open buildings for night shelter, where the manual milking is done in the evening and morning or at greater distances from home in Alpine goals, where sheepfolds and cowfolds are organized.

In sheepfolds and cowfolds the milking and milk processing take place, resulting in specific traditional products: cheese, curd, jintuit and so on.

For keeping and exploiting animals in folds, first there is the measurement of milk when animal owners attend the milking and for each liter of milk produced they calculate 5 kg of curd and 0.5 kg of cottage cheese that the owner of animals shall be entitled to. [2]

In general, in the mountain area, the main production obtained by livestock is the milk, as it has the lowest inputs.

The breeders of dairy cows from mountain areas have selected animals capable of producing 10 -12 liters of milk per day on

average, based only on basic fodder, meaning hay during stabulation and grazing on pastures in summer.

In the case of owners of 1-3 cows / farm (the most common situation), 30% of milk produced is for self-consumption and 70% of the production is commodity that is sold to the processing units present in the area and therefore we can assess that this situation is favorable to breeders.

In every village from Bucovina, for example, there is a milk collection network operating since before 1990.

In recent years, the new processing technologies and the emergence of various actors in the market of milk processing, as well as the need to align the quality of products to the European standards, led to the emergence of collection centers in each locality, centers that are equipped with a minimum inventory, where we find collecting tanks of various capacities, depending on the potential of the area and mini-laboratories to determine the quality parameters of raw materials.

During summer, as mentioned above, milk can also be processed in sheepfolds and cowfolds, where traditional products can be obtained, that will be consumed during the summer, sold or preserved for winter. This type of processing raises problems regarding hygiene of milking and obtaining compliant products that will meet European quality standards.

Starting from the current situation we think that increasing the amount of milk complying with the rules of food safety is possible, through the following measures:

Construction of collecting centers and their location so as to enable, depending on distance, access conditions, for the milk to get, in one hour maximum from udder of the cow into the cooling tank. [3]

In these collecting centers the milk obtained in subsistence farms that breed from 1-2 to 10 dairy cows will be collected, both during winter when animals are kept inside stables and summer when animals are grazing on pastures near the house.

A collecting center will be constructed and placed on the land of one of the producers, will comply with the conditions specified in Figure 1 and will be equipped with the following:

- Cooling tank of variable capacity, depending on area's potential;

- Computerized milk analyser connected to a printer;
- Computer for storing data.

The construction of the collecting center - can be done by using either bricks or sandwich-type walls, it will be connected to a power supply network, water supply

network and sewerage network - the costs being of Euros 200 /square meter on average.

The costs for a collecting point are shown in table 1 and the details for improvement are shown in figure 1.

The producers ascribed to a collecting point can establish an associative organization recognised by the Iwa-in-force.

Table 1 Assessment of the investment for building a milk collecting center

Specification	Price without VAT min/max	Total costs without VAT
Constructions and connections – 15 sm/center	Euros 200 /sm	Euros 3000
Milk cooling tank	Euros 3400 / Euros 17650	3400/17650 euros
Milk analyser and colonies counter connected to a printer	Euros 1600	Euros 1600
Computer for storing data	Euros 1000	Euros 1000
TOTAL INVESTMENT		MIN. 9000 Euro MAX. 23250 Euro

MILK COLLECTING POINT

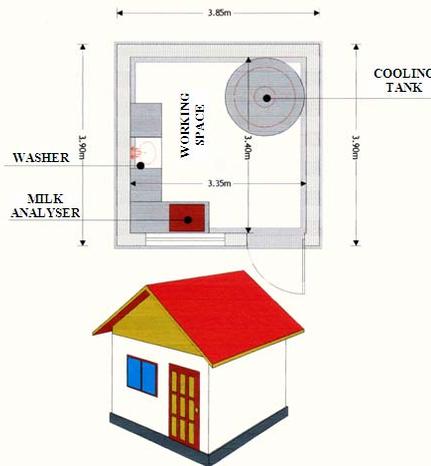


Fig. 1 Constructive details for a milk collecting center [3]

In the summer, starting with June 1st, at altitudes higher than 1,000 meters, folds (pens), which can be mixed (cattle, sheep and possibly reduced number of goats), are organized.

Facilities for sheepfolds and cowfolds

At such a fold between minimum 30 and maximum 100 dairy cows gather. The number of cows is dependent on the area of land that the owner of fold has, but often is also dependent on the labor force needed for the daily activities of the sheepfold, such as milking the animals, making cheese, supplying the fold with what is necessary (the distances

the people need to travel mean 3-4 hours of climbing, inaccessible roads), etc.

Typically, in these folds and more than 40% of the number of cows from the mountain area are grazing and producing milk [3].

In this respect, CEFIDEC Vatra Dornei, tried designing such a fold (Table 2 and Fig. 2), where, by following the rules imposed by food safety, one can perform processing the milk and obtaining products, which subsequently will be subject to certification as traditional products.

Table 2 Assessment of the investment for the endowment of a mountain fold, in order to obtain compliant milk

Specification	Price without VAT min/max	Total costs without VAT
Constructions and connections – 68 square/unit	euros 200 /mp	euros 13600
Electricity generator (Diesel)	euros 5000	euros 5000
Platform with 8 – 10 milking seats	euros 20000	euros 20000
Milk cooling tank	euros 3400 / euros 17.650	euros 3400/17650
Milk analyser and colonies counter connected to a printer	euros 1600	euros 1600
4 wheel drive tractor 45 HP	euros 8000	euros 8000
Agricultural machinery + milk transportation tank	euros 25000	euros 25000
Machinery for milk processing	euros 18550	euros 18550
TOTAL INVESTMENT		MIN. Euros 95150 MAX. Euros 109400

MODERNIZED FOLD – DESIGN OF GROUND FLOOR

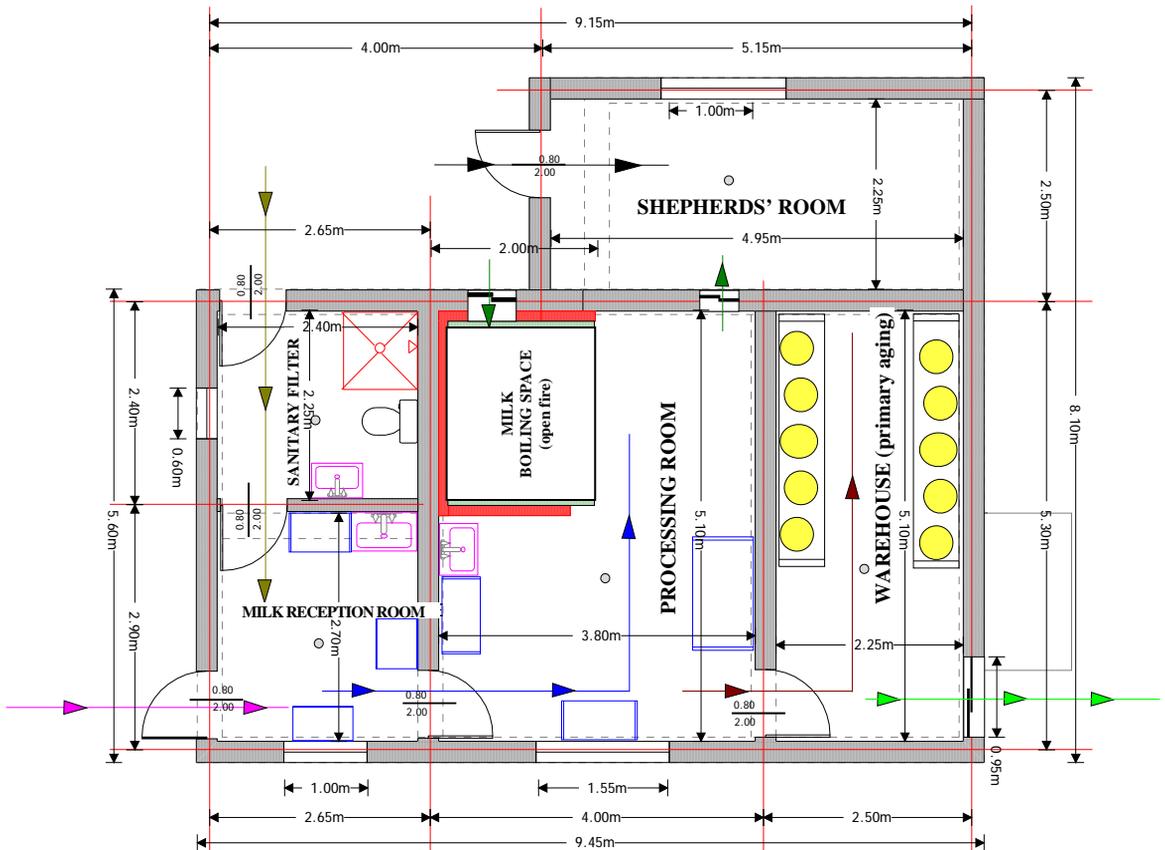


Fig. 2 Fold's design – Interior Organization, by Ț. Chirileanu and M. Bocănci [1]

Since food safety and processing conditions in these units require obtaining compliant milk, we believe that in this situation a number of endowments are also required, such as:

- electricity generator or a renewable energy plant (the places where the folds are located do not have access to electricity grids);
- mobile platform, with 8 to 10 milking seats (in winter, it moves to the village and will be used next year);
- milk cooling tank;
- milk analyser;
- tank for transporting milk, with a capacity of minimum 500 liters ;
- 4 wheel drive tractor to transport the milk to processing units, when processing is not performed in the fold;
- agricultural machinery (mills, plows, scythe, rake, self-loading trailer, manure spreaders) to work with the tractor, for maintenance and management of grasslands belonging to the fold;

They (the folds) will function as an associative form. The solutions we propose are in the first but also in the second place, the results of meetings and discussions that we had with: animal breeders, mayors, owners and organizers of folds, participants in training programs organized by CEFIDEC Vatra Dornei.

As a result of discussions – we came to the conclusion that in the case of *own contribution* to these investments – a participation of 20% from the beneficiaries will be bearable and the rest of the funds can be accessed from various funding programs.

CONCLUSIONS

- Dairy farmers will have to strive towards obtaining compliant milk, as starting with January 1st 2014, Romania will not benefit from any exemption in this respect;
- Romania can not become exporter on the single market without the certification of products it wants to export;
- Small farms, if establish themselves as an association, can produce compliant milk, at a reasonable cost price and thus they can

negotiate the price at which they deliver the milk to processors;

- The pastoral units (folds) will have to be endowed and to follow hygiene and food safety rules if they want their products to be sold;
- The Future National Rural Development Program, as an instrument of the CAP, will include separate measures for increasing the quality of food products.

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